

July, 1951.

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PLANT DISEASE NOTES.CEREALS AND GRASSES.LEAF SPOTS OF CEREALS AND GRASSES:

The writer has been working on leaf spots and glume blotches of cereals and grasses, particularly those caused by species of Septoria and Selenophoma, and would appreciate any material from pathologists in Australia. Where possible, heads should be included with grass specimens, so that specific identity of the host can be ascertained.

Faculty of Agriculture, University of Sydney.

DOROTHY SHAW.

FIELD AND FODDER CROPS.PASTURE DISEASES AT KEITH, S.A.

Three distinct types of abnormality in pasture are under observation in this district. The commonest is the one described in A.P.D.R.2: 29-30. It appears to be of similar origin to the cereal disease "purple patch", which has occurred for many years in S.A., and is attributed to Rhizoctonia solani. Both the pasture and the cereal phases of this disease are fairly common in the Keith district this season, chiefly on soils that have been farmed for a number of years. The symptoms of cereals sown on diseased areas in pasture appeared identical with those of "purple patch" in neighbouring cereal crops; Rhizoctonia solani was isolated from their rotted roots, and from those of Bromus rigidus. Bare patches in a field of barrel medic, mapped in 1950, are reappearing as "purple patch" in a crop of oats sown there this season. Subterranean clover sown on "purple patch" areas in cereal crops developed early symptoms like those of the pasture disease.

Haresfoot clover, barley grass, capeweed, and Erodium sp. were similarly affected. Deep-rooted plants, such as lucerne and evening primrose, when well established, appeared to be little affected. R. solani was isolated less often from sub. clover than from cereals or grasses; though it appeared more pathogenic to sub. clover than other fungi tested, and produced a similar type of root rot to that occurring in the field, its role in connection with non-gramineous plants needs further investigation. This type of patch was usually roughly circular, with clearly defined edges. The purplish tinge was most marked three or four weeks after germination, and often disappeared later.

The author has been working on this subject for some time and has been able to collect a large number of specimens of the various forms of the genus. The results of his work are here presented in a series of plates, which will be found of interest to all who are concerned with the study of the genus.

PLATE I. *University of Toronto*

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The second type of bare or stunted patch, found only in one field, was less regular in shape, and the edges were less clearly defined. A yellowish tinge replaced the purple of the first type. In the early stages, root rotting was little if any worse than normal, but the roots of sub. clover, lucerne, Erechthites, Vittadinia, spear thistle, etc., bore conspicuous knots caused by a nematode, Heterodera marioni, H. schachtii, or a similar species. This nematode was found only in the affected patches or within a few inches of their margins. Sub. clover was affected worse than grasses. No root-knot was found in the "purple patch" areas. Meadow nematodes (Pratylenchus pratensis and/or allied species) occurred in both types of patch, but as they were also common in the normal pasture, it is thought unlikely they were primary pathogens.

A third abnormality involved the death of many sub. clover seedlings; the survivors were severely stunted, and bluish or greyish green. Reddish brown lesions occurred on the hypocotyls just below soil level, the roots being relatively free from rotting. This did not occur in well-defined patches. Its cause is not yet known.

C.S.I.R.O., Canberra.

W.V. LUDBROOK.

VEGETABLES:

BEAN SEED CERTIFICATION IN NEW SOUTH WALES:

During the 1950/51 season in New South Wales, 91 bean seed crops (373 acres) were inspected and 51 crops (192 acres) were passed for certification. It is estimated that the total yield of certified seed will be about 2700 bushels, of which about 47% will be Brown Beauty. Other varieties certified were Hawkesbury Wonder, Tweed Wonder, Goward Special, Wellington Wonder, Windsor Longpod and Canadian Wonder. Of the 40 crops rejected, 21 (14 of Brown Beauty, 6 of Hawkesbury Wonder and one of Windsor Longpod) were rejected because of the presence of anthracnose, one crop (Canadian Wonder) because of the presence of halo blight, and 18 for reasons other than the presence of disease.

The extremely low incidence of halo blight was noteworthy, this being the first year since the establishment of the certification scheme in the 1943/44 season that no seed crop of the three varieties Brown Beauty, Tweed Wonder and Wellington Wonder was found affected with halo blight. This low incidence of halo blight in seed crops is correlated with a similar low incidence in green bean crops in New South Wales.

Department of Agriculture, Sydney.

R.D. WILSON.

The first part of the report is devoted to a description of the work done during the year. It is divided into two main sections, the first of which deals with the work done in the laboratory and the second with the work done in the field. The laboratory work is described in detail, and the field work is described in a more general way. The report is written in a clear and concise style, and it is well illustrated with diagrams and photographs. The work described in the report is of a high standard, and it is a pleasure to read of the progress made during the year.

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BEAN RUST.

Reference has been made earlier (A.P.D.R., 1, PP. 6-7, 21; 2, PP. 19, 35, 36; 3, p. 8) to the occurrence in N.S.W. of a new physiologic race which attacks "Brown Beauty" and other dwarf varieties. Rusted material forwarded by Mr. W. P. Cass Smith from Western Australia showed the presence of this race on runner beans in that State, where previously race 17 had been the common one. Dwarf varieties like "Hawkesbury Wonder," "Tweed Wonder," "Canadian Wonder" and "Brown Beauty" were grown by Mr. Cass Smith during the late summer and all became infected. From other areas there is evidence that the new race is superseding the two races formerly present.

Faculty of Agriculture, University of Sydney.

W.L. WATERHOUSE.

CELERY DISEASES IN THE M.I.A.

The growing and canning of celery on the Murrumbidgee Irrigation Areas is a comparatively new venture which has been beset with some troubles in its establishment.

The 1950 crop was threatened by the appearance of late blight - Septoria apii-graveolentis early in April. Spraying with Bordeaux mixture 1-1-10 and a change to fine weather held the disease in check but it was found that a heavy deposit of Bordeaux mixture resulted in a distinct bluish-green stain on the canned product. With this experience in mind precautions were taken to subject the seed for the 1951 season to hot water treatment.

The germination of this seed was quite satisfactory but by mid-January 1951 some 40 to 50% of the seedlings were in a state of collapse. Examination of specimens with severe symptoms, moderate symptoms and no obvious symptoms showed eelworm (Heterodera marioni) present in 90 to 100% of the plants. When this was revealed it was wisely decided to abandon the celery project for 1951. This is considered a rather unusually severe occurrence of Heterodera marioni on seedlings.

Department of Agriculture, Leeton, N.S.W.

J.R. MORSCHER.

LATE BLIGHT OF POTATOES -
VARIETAL REACTION IN TABLELAND AREAS:

Moderate to severe attacks of late blight (Phytophthora infestans) were experienced in the Northern Tablelands of New South Wales, particularly in the Dorrigo-Ebor area. The varieties Adina and Monak showed high and moderate resistance respectively in a local trial in which Factor and Kasota were completely destroyed. Sequoia and Saranac were intermediate.

In the Crookwell district of the Southern Tablelands both Factor and Sequoia were severely blighted, moderate tuber rotting developing in both varieties. Sebago, Adina and Monak showed high field resistance.

Department of Agriculture, Sydney.

R. J. CONROY.

FRUIT.

CITRUS VIRUSES:

During the course of a survey of virus diseases in citrus in N.S.W., evidence has accumulated that scaly butt of trifoliata stock is not a manifestation of the quick-decline - stem pitting complex (A.P.D.R. 2:4:50, 1950).

Among the trees tested to date are 32 on trifoliata stock, 11 scaly butts, and 21 non scaly butts, varying in age from 8 to 50 years and including Valencia, Washington and Thompson Navel oranges, Marsh grapefruit, Thorny, Ellendale, Emperor, and Unshiu mandarins. Irrespective of the condition of the trifoliata stock all have given, when worked to West Indian Lime, the reaction described by McClean as specific for stem pitting, and on Seville seedlings symptoms of quick decline.

In addition, as part of the trifoliata investigations, Seville stocks at Narara nursery were worked with buds from a scaling and a non-scaling Washington Navel orange in March 1949. The resultant trees (12 of each) are now all showing severe symptoms of quick decline.

During field surveys of Marsh grapefruit on trifoliata stock cases have been observed in orchards at Mallee Cliffs (7 trees), Leeton (1 tree) and Wyong (10 trees) of trees showing marked stem pitting but no scaly butt.

Finally buds from a trifoliata sucker showing scaly butt worked to West Indian Lime seedlings produced in them no virus symptoms.

Department of Agriculture, Sydney.

LILIAN R. FRASER.

PEACH RUST:

The 1951 Peach harvest will be remembered for one of the worst rust epiphytotics on the M.I.A. The first indication was late in November when *Puccinia pruni-spinosae* was found on the fruit of early dessert varieties. During the later part of January the visible development of this disease on the canning varieties was most alarming. Some unsprayed blocks were showing 95% infected fruit whilst 50% was quite common.

Observations this season indicated a possible varietal susceptibility to rust. Phillips showed an average fruit infection of no more than 10 to 15% compared with 50% or more on unsprayed Golden Queen trees. Pullars were at first thought to be comparatively free but by harvest time they were affected as seriously as Golden Queen. Of the new varieties under trial Boyce was quite outstanding. It repeatedly showed a low percentage of infection even when surrounded by other varieties infected to the extent of 60% or more.

The total peach harvest for 1951 was no more than two-thirds of the anticipated harvest. Even this is not a true picture of the loss from rust because a much higher percentage of fruit was processed as jam and second grade canning than usual.

A few growers carried out the recommended spray programme of Bordeaux mixture 15-15-100 + $\frac{1}{2}$ at bud-swell and the foliage sprays of Bordeaux 2-2-100 + $\frac{1}{2}$ at mid-October and mid-December. In every case brought to notice the grower had practically no rust trouble. However the foliage application of Bordeaux in a moist Spring, when rust is more likely to be a problem, can cause injury and leaf drop particularly when rain immediately follows the spraying. The October foliage spray should be regarded as the most important spray in the above schedule. It was observed that the timing of this spray needs to be rather precise - not before the middle of October but not later than the end of October.

Department of Agriculture, Leeton, N.S.W.

J.R. MORSCHEL.

ORNAMENTALS.CHRYSANTHEMUM STUNT MOTTLE:

A virus disease which agrees in general with that described as stunt mottle in Canada (M.F. Welsh, Sci. Agr. 28, p.422) has been under observation in a number of N.S.W. flower farms during the past two years.

Badly affected plants are stunted, the leaves small, with some vein knotting. The vein banding type of mottle described by Welsh is not always present, but is prominent in some varieties.

The flowers are small with poor petal production and usually a one-sided development. There is some indication that symptoms develop with greater severity in summer and early autumn than in spring growth.

The type of reaction produced by the virus appears to vary considerably with the variety, some showing only a small percentage of affected flowers and little stunting, others being rendered commercially valueless. This is in accord with the Canadian observation that some varieties can carry the virus symptomlessly.

The variety most severely affected of those seen is William Turner, but a number of other Victorian varieties also appear to be fairly badly injured and to carry a high percentage of infected individuals.

It is perhaps significant that a proportion of the varieties described in Canada as carrying the virus, or being severely affected are of Victorian origin. Is it possible that the virus was brought into Canada and also to N.S.W. on new introductions raised by a prominent Victorian chrysanthemum breeder?

Department of Agriculture, Sydney.

L.R. FRASER.

DOWNY MILDEW ON TRACHYMENE (UMBELLIFERAE):

A downy mildew Peronospora sp. has been found on Trachymene (Didiscus) at Sunnybank, near Brisbane. A high proportion of the plants in a bed of 870 are affected. At present the older lower leaves only are spotted, the younger ones being quite free from infection. The lesions appear black and slightly raised on the ventral surface of the leaf and from the dorsal side are paler, with the conidiophores visible to the naked eye. In size they range from pin points to areas about 5 mm. across. The margins of the smaller lesions are rounded, but those of the larger ones are irregular and tend to follow the main veins.

This is believed to be the first record of Peronospora sp. on Trachymene in Queensland. The first specimens were collected by J.C. Johnson on 31st May, 1951.

Botany Department, University of Queensland.

DAPHNE MATTHEWS.

MISCELLANEOUS PLANTS.HOP DISEASES IN TASMANIA.

An investigation into a disease which is present in various hop fields in Southern Tasmania was commenced in September, 1950. The symptoms comprise a wilting back from the top of the bines, after they have grown to the wires. The wilting usually occurs first in December and may affect only one or two of the six bines which are left in each hill. Apparently associated with the wilting is a "growing off" or "choking" of the bine at its base.

Several fungi have been isolated from such material. Among those being tested for pathogenicity are a Fusarium sp. a Verticillium sp. and a Phoma sp.

The Verticillium sp. has a dark resting mycelium and also forms microsclerotia on oat-meal agar. This fungus is, therefore, tentatively identified as V. dahliae. Another Verticillium with a pink mycelium was isolated but this is thought to be non-pathogenic.

From observations made while collecting material for the above investigation it would appear that the viruses responsible for hop nettlehead and hop mosaic are present in Tasmanian hop fields. It is planned to investigate this matter further during the coming season.

Department of Agriculture, Hobart.

GWENDA WINGRAVE.

PINK DISEASE IN NORTH QUEENSLAND:

Pink disease (Corticium salmonicolor) was widespread in North Queensland early this year, causing dieback on many shrubs and trees. Heavy rainfall in the first three months of the summer, following winter precipitations well above the average no doubt proved very conducive to its development. The disease was recorded on the following hosts:- Citrus spp. (orange, lemon, grapefruit), Coffee (Coffea arabica), fig, mango (Mangifera indica), Cashew Nut (Anacardium occidentale), loquat, custard apple (Anona squamosa), Anona muricata, litchi nut (Litchi chinensis), sapodilla (Achras sapota), Calabash tree (Crescentia cajeate), Algaroba bean (Prosopis duliflora), jak fruit (Artocarpus integrifolia), oleander (Nerium oleander), Bauhinia triandra, Cassia nodosa, Cassia fistula, Cassia fruticosa, Eugenia malacensis and Thevetia nerifolia.

Department of Agriculture, Cairns, Queensland.

W. PONT.

MISCELLANEOUS NOTES.VARIABILITY IN REACTION OF NICOTIANA GLUTINOSA TO TOBACCOMOSAIC VIRUS.

Nicotiana glutinosa plants which show local lesions when inoculated with tobacco mosaic virus have often been used for estimating virus concentration. The following experiment demonstrates the variability in reaction of what appeared to be uniform leaves. A number of N. glutinosa plants approaching flowering were topped and regrowth occurred from an axillary bud on each plant. Twelve plants with apparently uniform regrowth were selected and six median leaves were inoculated with various concentrations of tobacco mosaic virus using half leaves in a replicated design balanced with respect to leaf positions. Statistical examination of the results showed real and marked differences between plants and also between the six leaves used on each plant. The general trend was for the basal leaves to have low lesion counts increasing up the plant, with a reduction near the tip which is probably due to the decrease in size of these leaves.

C.S.I.R.O., Canberra.

R.D. BROCK.DAMAGE BY HORMONE WEEDICIDE:

Cauliflower seedlings with galls at soil level were brought in from Castle Hill recently by Dr. I.A. Watson. The proliferations occurred mainly in the region of the leaf axils, but were fairly similar in appearance to those sometimes found occurring just above soil level in plants infected with Plasmodiophora brassicae. No evidence of this organism could be detected, however, and further careful examination failed to reveal any other fungi, bacteria or nematodes.

When the history of the crop was investigated, it was found that the hormone weedicide 2, 4, 5-T had been sprayed on weeds nearby approximately 2-3 weeks earlier. Beans adjacent to the cauliflowers were also said to be affected, but were destroyed before they could be examined. Because of the absence of organisms in association with the galls, and the known application of 2, 4, 5-T in the vicinity, it seems probable that the proliferations on the cauliflowers had been caused by drift of the hormone spray on to the vegetable crop.

Faculty of Agriculture, University of Sydney.

DOROTHY SHAW.

COMMONWEALTH MYCOLOGICAL INSTITUTE NOTES.MEETING OF C.A.B. OFFICIAL CORRESPONDENTS:

The writer represented the Commonwealth Mycological Institute at a meeting of Official Correspondents held in Melbourne on May 2nd. It appears that Australia is making good progress in developing an auxillary C.A.B. organisation within its territory. This has been facilitated by the warm support of the C.S.I.R.O. Executive in appointing to its staff a C.A.B. Liaison Officer and in sponsoring annual meetings of Official Correspondents. There is, doubtless, room for extending the usefulness of this orderly Commonwealth agricultural organisation and in so far as the C.M.I. is concerned the writer would welcome suggestions from Australian plant pathologists. There is a code of duties of C.A.B. Official Correspondents which might be a guide to those who wish to make suggestions:-

1. He should ensure that specialists are conscious of the bureau, its facilities, its publications and the general service it provides. There are examples of specialists not knowing of the existence of Technical Communications on subjects on which they were actually seeking information. Specialists often do not realise that they can write direct to a bureau for information. This organisation is not a United Kingdom organisation. It belongs to the contributing countries and there is no red tape about correspondence.
2. He should act as a centre for receiving advance synopses or manuscripts of Technical Communications; should suggest modifications; should suggest collaborators; should obtain and forward criticisms of Technical Communications. There is nothing to prevent a Director dealing direct with any individual specialist but it is often better done through the Official Correspondent.
3. He should make suggestions of subjects for Technical Communications.
4. He should assist in securing notices and reviews of Technical Communications in local journals and generally in advertising Technical Communications.
5. He should generally criticise and comment on the bureau's activities from the point of view of the local specialist.
6. He should keep the Director informed of any notable developments in the particular field of his bureau.
7. When practicable it is an advantage if he knows of enquiries sent to the bureau and the reply of the bureau.

8. He should see that the bureau is furnished with bulletins and reports published in his country on the subject of the bureau especially occasional publications not part of an established series which the bureau might otherwise miss.
9. He should periodically report programmes of investigations proceeding or projected in his country on the subjects of the bureau.
10. He should suggest how the bureau can assist research projects, e.g. by providing summaries of published literature.
11. He should assist in collecting information needed by the bureau for reply to enquiries (not necessarily for publication).
12. He should inform the bureau of likely visits of scientists to the United Kingdom and should interest those scientists in the particular bureau.
13. He may help in arranging tours for scientists who are visiting the country under the general advice of the Commonwealth Agricultural Bureaux.
14. At least one bureau has made great use of its Official Correspondents to facilitate the collection and exchange of seeds and plant materials.

PROPOSED DUPLICATION BY F.A.O. OF C.A.B. SERVICES:

Concern was expressed at the recent Conference of C.A.B. Official Correspondents at the apparent trend of F.A.O. to duplicate C.A.B. services. The subject was raised during discussion on the proposed International Plant Protection Convention and the recommendations of the special session of F.A.O. held in Washington in November, 1950 dealing with reporting of plant diseases and pests and the establishment of an international centre for information on plant diseases and pests.

The writer has been in correspondence with Dr. Wiltshire on this matter and he feels as we do that there is at present no assurance on paper that an expensive organisation which will duplicate existing Commonwealth services will not be built up by F.A.O. He has drawn the attention of the Ministry of Agriculture, the Colonial Office and the C.A.B. Executive Council to the trend and action is contemplated. Dr. Wiltshire would cordially welcome any support he could receive from Australia. Under the African Phytosanitary Convention the C.M.I. is the recognised information centre for plant diseases and in the South-east Asia draft convention the Institute is given a similar function. It is Dr. Wiltshire's view that the commonsense thing would be for F.A.O. to make the C.M.I. the information centre for Europe and the world.

